

AMENDMENTS TO THE CLAIMS

1. **(Original)** A plasmid comprising an rRNA gene having a mutant Anti-Shine-Dalgarno sequence, at least one mutation in said rRNA gene, and a genetically engineered gene which encodes a selectable marker having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair.
2. **(Original)** The plasmid of claim 1, wherein the rRNA gene is from a species selected from the group consisting of *Mycobacterium tuberculosis*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Yersenia pestis*, *Staphylococcus aureus*, *Streptococcus pyogenes*, *Enterococcus faecalis*, *Chlamydia trachomatis*, *Saccharomyces cerevesiae*, *Candida albicans*, and *trypanosome*.
3. **(Original)** The plasmid of claim 1, wherein the selectable marker is chosen from the group consisting of chloramphenicol acetyltransferase (CAT), green fluorescent protein (GFP), and both CAT and GFP.
4. **(Currently Amended)** The plasmid of claim 1, wherein the mutant Anti-Shine-Dalgarno sequence is selected from the group consisting of the sequences set forth in SEQ ID NOS: 24-159. ~~Figures 12, 13, 15, and 16.~~
5. **(Currently Amended)** The plasmid of claim 1, wherein the mutant Shine-Dalgarno sequence is selected from the group consisting of the sequences set forth in SEQ ID NOS: 24-159. ~~Figures 12, 13, 15, and 16.~~
6. **(Currently Amended)** The plasmid of claim 1, wherein the mutant Anti-Shine-Dalgarno sequence and the mutant SD sequence are a mutually compatible pair selected from the group consisting of the sequences set forth in SEQ ID NOS: 24-159. ~~Figures 12, 13, 15, and 16.~~
7. **(Original)** The plasmid of claim 6, wherein the mutually compatible mutant Shine-Dalgarno and mutant Anti-Shine-Dalgarno pair permits translation by the rRNA of the selectable marker.
8. **(Original)** The plasmid of claim 3, wherein the selectable marker is CAT.
9. **(Original)** The plasmid of claim 3, wherein the selectable marker is GFP.

10. **(Original)** A cell comprising the plasmid of claim 1.
11. **(Original)** The cell of claim 10, wherein the mutations in the rRNA gene affect the quantity of selectable marker produced.
12. **(Original)** The cell of claim 10, wherein the cell is a bacterial cell.
13. **(Original)** The plasmid of claim 1, wherein the DNA sequence encoding the rRNA gene is under the control of an inducible promoter.
14. **(Original)** A plasmid comprising an *E. coli* 16S rRNA gene having a mutant Anti-Shine-Dalgarno sequence, at least one mutation in said 16S rRNA gene, and a genetically engineered gene which encodes GFP having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair.
15. **(Currently Amended)** The plasmid of claim 14, wherein the mutant Anti-Shine-Dalgarno sequence is selected from the group consisting of the sequences set forth in SEQ ID NOS: 24-159. ~~Figures 12, 13, 15, and 16.~~
16. **(Currently Amended)** The plasmid of claim 14, wherein the mutant Shine-Dalgarno sequence is selected from the group consisting of the sequences set forth in SEQ ID NOS: 24-159. ~~Figures 12, 13, 15, and 16.~~
17. **(Currently Amended)** The plasmid of claim 14, wherein the mutant Anti-Shine-Dalgarno sequence and the mutant Shine-Dalgarno sequence are a mutually compatible pair selected from the group consisting of the sequences set forth in SEQ ID NOS: 24-159. ~~Figures 12, 13, 15, and 16.~~
18. **(Original)** The plasmid of claim 17, wherein the mutually compatible mutant Shine-Dalgarno and mutant Anti-Shine-Dalgarno pair permits translation by the mutant 16S rRNA of the selectable marker GFP.
19. **(Original)** A cell comprising the plasmid of claim 14.

20. **(Original)** The cell of claim 19, wherein the mutation in the 16S rRNA gene affects the quantity of selectable marker produced.
21. **(Original)** The cell of claim 19, wherein the cell is a bacterial cell.
22. **(Original)** The plasmid of claim 14, wherein the DNA sequence encoding the 16S rRNA gene is under the control of an inducible promoter.
23. **(Original)** A method for identifying functional mutant ribosomes comprising:
- (a) transforming a host cell with a plasmid comprising an rRNA gene having a mutant Anti-Shine-Dalgarno sequence, at least one mutation in said rRNA gene, and a genetically engineered gene which encodes a selectable marker having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;
 - (b) isolating cells via the selectable marker; and
 - (c) identifying the rRNA from the cells from step (b), thereby identifying functional mutant ribosomes.
24. **(Original)** A method for identifying functional mutant ribosomes comprising:
- (a) transforming a host cell with a plasmid comprising an *E. coli* 16S rRNA gene having a mutant Anti-Shine-Dalgarno sequence, at least one mutation in said 16S rRNA gene, and a genetically engineered gene which encodes GFP having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;
 - (b) isolating cells via the GFP; and
 - (c) identifying the rRNA from the cells from step (b), thereby identifying functional mutant ribosomes.
25. **(Original)** A method for identifying functional mutant ribosomes that may be suitable as drug targets comprising:
- (a) transforming a host cell with a plasmid comprising an rRNA gene having a mutant Anti-Shine-Dalgarno sequence, at least one mutation in said rRNA gene, and a genetically engineered gene which encodes a selectable marker having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;

- (b) isolating cells via the selectable marker;
- (c) identifying and sequencing the rRNA from the cells from step (b), thereby identifying regions of interest;
- (d) selecting regions of interest from step (c);
- (e) mutating the regions of interest of step (d);
- (f) inserting the mutated regions of interest from step (e) into a plasmid comprising an rRNA gene having a mutant Anti-Shine-Dalgarno sequence and a genetically engineered gene which encodes a selectable marker having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;
- (g) transforming a host cell with the plasmid from step (f);
- (h) isolating cells of step (g) via the selectable marker; and
- (i) identifying the rRNA from step (h), thereby identifying functional mutant ribosomes that may be suitable as drug targets.

26. **(Original)** A method for identifying functional mutant ribosomes that may be suitable as drug targets comprising:

- (a) transforming a host cell with a plasmid comprising an *E. coli* 16S rRNA gene having a mutant Anti-Shine-Dalgarno sequence, at least one mutation in said 16S rRNA gene, and a genetically engineered gene which encodes GFP having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;
- (b) isolating cells via the GFP;
- (c) identifying and sequencing the rRNA from the cells from step (b), thereby identifying regions of interest;
- (d) selecting the regions of interest from step (c);
- (e) mutating the regions of interest from step (d);
- (f) inserting the mutated regions of interest from step (e) into a plasmid comprising an *E. coli* 16S rRNA gene having a mutant Anti-Shine-Dalgarno sequence and a genetically engineered gene which encodes GFP having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;
- (g) transforming a host cell with the plasmid from step (f);
- (h) isolating cells of step (g) via the GFP; and
- (i) identifying the rRNA from step (h), thereby identifying functional mutant ribosomes that may be suitable as drug targets.

27. **(Original)** A method for identifying drug candidates comprising:
- (a) transforming a host cell with the plasmid of claim 1;
 - (b) isolating cells via the selectable marker;
 - (c) identifying and sequencing the rRNA from step (b) to identify the regions of interest;
 - (d) selecting regions of interest from step (c);
 - (e) mutating the regions of interest from step (d);
 - (f) inserting the mutated regions of interest from step (e) into a plasmid comprising an rRNA gene having a mutant Anti-Shine-Dalgarno sequence and a genetically engineered gene which encodes a selectable marker having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;
 - (g) transforming a host cell with the plasmid from step (f);
 - (h) isolating cells from step (g) via the selectable marker;
 - (i) identifying the rRNA from step (h) to identify the functional mutant ribosomes;
 - (j) screening drug candidates against functional mutant ribosomes from step (i);
 - (k) identifying the drug candidates from step (j) that bound to the functional mutant ribosomes from step (i);
 - (l) screening the drug candidates from step (k) against a human rRNA; and
 - (m) identifying the drug candidates from step (l) that do not bind to the human rRNA, thereby identifying drug candidates.
28. **(Original)** A method for identifying drug candidates comprising:
- (a) transforming a host cell with the plasmid of claim 14;
 - (b) isolating cells via the selectable marker;
 - (c) identifying and sequencing the rRNA from step (b) to identify the regions of interest;
 - (d) selecting the regions of interest from step (c);
 - (e) mutating the regions of interest from step (d);
 - (f) inserting the mutated regions of interest from step (e) into a plasmid comprising an *E. coli* 16S rRNA gene having a mutant Anti-Shine-Dalgarno sequence and a genetically engineered gene which encodes GFP having a mutant Shine-Dalgarno sequence, wherein the mutant Anti-Shine-Dalgarno and the mutant Shine-Dalgarno sequence are a mutually compatible pair;
 - (g) transforming a host cell with the plasmid from step (f);

- (h) isolating cells from step (g) via the selectable marker;
 - (i) identifying the rRNA from step (h) to identify the functional mutant ribosomes;
 - (j) screening drug candidates against the functional mutant ribosomes from step (i);
 - (k) identifying the drug candidates from step (j) that bound to the functional mutant ribosomes from step (i);
 - (l) screening the drug candidates from step (k) against a human 16S rRNA; and
 - (m) identifying the drug candidates from step (l) that do not bind to the human 16S rRNA, thereby identifying drug candidates.
29. **(New)** The functional mutant ribosomes identified by the method of claim 23.
 30. **(New)** The functional mutant ribosomes identified by the method of claim 24.
 31. **(New)** The functional mutant ribosomes that may be suitable as drug targets identified by the method of claim 25.
 32. **(New)** The functional mutant ribosomes that may be suitable as drug targets identified by the method of claim 26.
 33. **(New)** The drug candidates identified by the method of claim 27.
 34. **(New)** The drug candidates identified by the method of claim 28.
 35. **(New)** A functional genomics database comprising the functional mutants identified by claim 29.
 36. **(New)** A functional genomics database comprising the functional mutants identified by claim 30.